AMENDMENTS TO THE SPECIFICATION

Please replace the text for the Summary of the Invention beginning on page 6 with the following:

The present invention is directed to apparatus and methods of operation that are further described in the following Brief Description of the Drawings, the Detailed Description of the Invention, and the claims. Other features and advantages of the present invention will become apparent from the following detailed description of the invention made with reference to the accompanying drawings.

Please rewrite the first full paragraph of page 14 as follows:

Figure 3 shows an example top level diagram of an RF transmitter in accordance with the present invention. The top-level diagram of an RF transmitter 88 of Figure 3 is employed within the Bluetooth Medium Rate Standard in the described embodiment of the invention. The Medium Rate Bluetooth transmitter 88 employs both binary frequency-shift-keying (FSK) as well as 4 and 8 level phase-shift keyed (PSK) modulation. The baseband processor provides transmit (TX) data, i.e., either binary data for FSK modulation or 2- or 3-bit data for PSK modulation, as well as basic TX timing control. The symbol rate remains constant while the data rate varies according to modulation type (data rate provided by the baseband processor varies).

Please insert the following text above the last new paragraph of page 30:

The present invention provides a radio transmitter having a digital modulator that further includes logic for continuous amplitude and continuous phase modulation switching in an RF transmitter intended to support both frequency shift keying (FSK) and phase-shift keying (PSK) modulation techniques in a smooth and continuous manner that does not violate spectral mask requirements. Additionally, the symbol timing is preserved. The invention supports continuous modulation switching both ways, i.e., from FSK to PSK and from PSK to FSK.

Generally, a radio transmitter formed according to one embodiment of the present invention includes a Pulse Shaping block that is coupled to receive TX data from a TX data source, such as a baseband processor. The Pulse Shaping block produces frequency shift keyed (FSK) modulated TX data and phase-shift keyed (PSK) I and Q channel modulated data concurrently. Multiplexer (mux) circuitry is coupled to receive the I and Q channel modulated data, as well as a logic 1 and a logic 0. In the described embodiment, the mux circuitry, which comprises a 4X2 mux, outputs one of the I and Q channel modulated data or the logic 1 and logic 0 according to a received control command. The Pulse Shaping block, in operation, modulates a stream of 0 bits and produces a stream of FSK modulated 0 values and PSK modulated I and Q data for a first logic state of a mode control signal, and further produces FSK modulated TX data for a second logic state of the mode control signal. Accordingly, the mux control circuitry, by sending control signals to the mux, couples either the PSK modulated I and Q data to downstream modulation circuitry for the first logic state of the mode control signal and couples the logic 1 and logic 0 to the downstream modulation circuitry for the second logic state of the mode control signal. The downstream modulation circuitry further includes a coordinate rotation digital computer (CORDIC) that receives the FSK modulated signals (either 0 values or phase

information), as well as the I and Q channels (either the I and Q channel modulated data or the logic 1 and logic 0).

Coupled between the Pulse Shaping block and the CORDIC, is a phase accumulator that receives and accumulates phase information from the Pulse Shaping block. Accordingly, even when the Pulse Shaping block produces a stream of FSK modulated 0 values, the phase accumulator will produce a phase since its output is continuously fed into its input in a feedback loop. By adding a constant at the accumulator input, a phase ramp, or, equivalently, a non-zero IF frequency, can be imposed upon the transmitted signal.

In operation, the radio transmitter initially operates in a first communication mode, transmitting communication signals including ID information to a remote agent according to a first protocol utilizing a first modulation technique at a first data rate. For example, the first protocol may comprise an FSK modulation for legacy Bluetooth protocol communications at a 1Mbps data rate. Upon determining that the remote agent is capable of communicating in a second protocol (e.g., medium rate Bluetooth) at a second data rate of 2 or 3Mbps utilizing a second modulation technique, the radio transmitter will operate in a transition mode for a short period transmitting communication signals with a remote agent according to the first and second modulation techniques. Finally, in a second communication mode, the transmitter transmits communication signals with a remote agent solely according to the second protocol utilizing the second modulation technique at the second data rate. Throughout the first and second communication modes, as well as the transition mode, the transmitter, according to the described embodiments of the invention, will transmit in accordance with spectral mask requirements.